

IN THE CLAIMS

1. (Currently Amended) A wireless communication system for providing a service in a time division duplexing (TDD) mode and a frequency division duplexing (FDD) mode, the system comprising:

a mobile station for, during call setup, transmitting a duplexing mode determination factor to a base station, setting a TDD mode or an FDD mode as a reverse mode set by the base station, and setting up a channel for the set reverse mode and a forward channel to perform communication; and

a base station for, during call setup, receiving the duplexing mode determination factor from the mobile station, setting a reverse mode to the TDD mode or the FDD mode using the received duplexing mode determination factor, and setting up a reverse channel for the set mode and a TDD mode for forward transmission to communicate with the mobile station;

wherein the base station assigns to the mobile station a channel of a forward link and a reverse link in the TDD mode if the mobile station is located in a close area, and a channel of the forward link in the TDD mode and a channel of the reverse link in the FDD mode if the mobile station is located in a remote area;

wherein the base station assigns a frequency resource in a predetermined area among frequency resources available in the base station as reverse link resource in the FDD mode for reverse transmission, and assigns the remaining available frequency resources to a the forward link and-a the reverse link in the TDD mode; and

wherein the base station sets up a guard time of a predetermined time between switching times of-a the forward link and-a the reverse link in the TDD mode, and assigns time slots beginning at a time slot in an area close to the guard time in order of each mobile station nearest to the base station.

2. (Original) The wireless communication system of claim 1, wherein the mobile station generates the duplexing mode determination factor and reports the generated duplexing mode determination factor to the base station during predetermined periods in an active state.

3. (Original) The wireless communication system of claim 2, wherein the base station determines whether switching of a reverse mode of the mobile station is required each time a duplexing mode determination factor is received from the mobile station in the active state, and controls switching of the set mode and assigns a new channel to the mobile station to perform communication when mode switching is required.

4. (Previously Presented) The wireless communication system of claim 1, wherein the duplexing mode determination factor includes at least one of power of a pilot signal received from the base station and geographical position information of the mobile station.

5. (Cancelled)

6. (Original) The wireless communication system of claim 4, wherein the duplexing mode determination factor is transmitted over a dedicated control channel for the set mode.

7. (Previously Presented) The wireless communication system of claim 1, wherein the duplexing mode determination factor is transmitted over a dedicated control channel for the set mode.

8. (Cancelled)

9. (Cancelled)

10. (Previously Presented) The wireless communication system of claim 1, wherein channels for the forward link are assigned the time slots according to a position of the mobile station, detected from the duplexing mode determination factor.

11. (Previously Presented) The wireless communication system of claim 1, wherein channels for the reverse link for the TDD mode are assigned the time slots according to a position of the mobile station, detected from the duplexing mode determination factor.

12. (Currently Amended) A call control method in a base station for a wireless communication system, the base station being capable of communicating with a mobile station in a time division duplexing (TDD) mode and a frequency division duplexing (FDD) mode, the method comprising the steps of:

    during call assignment to the mobile station, analyzing a duplexing mode determination factor received from the mobile station to determine whether the mobile station is located in a close area with respect to the base station; and

    assigning to the mobile station a channel of a forward link ~~or~~ and a reverse link in the TDD mode if the mobile station is located in the close area, and a channel of the forward link in the TDD mode ~~or~~ and a channel of the reverse link in the FDD mode if the mobile station is located in a remote area;

    wherein a frequency resource in a predetermined area among frequency resources available in the base station is assigned as a resource for ~~a~~ the reverse link in the FDD mode for reverse transmission, and the remaining available frequency resources are assigned to ~~a~~ the forward link ~~and~~ a the reverse link in the TDD mode; and

    wherein the base station sets up a guard time of a predetermined time between switching times of the forward link and the reverse link in the TDD mode, and assigns time slots beginning at a time slot in an area close to the guard time in order of each mobile station nearest to the base station.

13. (Cancelled)

14. (Cancelled)

15. (Previously Presented) The call control method of claim 12, wherein channels for a forward link are assigned the time slots according to a position of the mobile station, detected from the duplexing mode determination factor.

16. (Previously Presented) The call control method of claim 12, further comprising:  
    checking again a position of the mobile station to determine whether the mobile station is located in the close area or the remote area upon receiving a duplexing mode determination factor from the mobile station during communication with the mobile station; and

    determining whether mode switching is required according to the checked position of the mobile station, and assigning a mode switching message and a new channel to perform communication if mode switching is necessary.

17. (Currently Amended) A call control method in a mobile station for a mobile communication system providing a time division duplexing (TDD) mode and a frequency division duplexing (FDD) mode, the method comprising the steps of:

    generating a duplexing mode determination factor and reporting the generated duplexing mode determination factor to a base station when assignment of a call is necessary;

    setting transmission and reception modes based on the received mode upon receiving a mode for a reverse link from the base station; and

    sending a channel assignment request to the base station to perform communication with a channel assigned during channel assignment;

wherein the base station assigns to the mobile station a channel of a forward link and the reverse link in the TDD mode if the mobile station is located in a close area, and a channel of the forward link in the TDD mode and a channel of the reverse link in the FDD mode if the mobile station is located in a remote area;

wherein a frequency resource in a predetermined area among frequency resources available in the base station is assigned as a resource for ~~a~~ the reverse link in the FDD mode for reverse transmission, and the remaining available frequency resources are assigned to ~~a~~ the forward link and ~~a~~ the reverse link in the TDD mode; and

wherein the base station sets up a guard time of a predetermined time between switching times of ~~a~~ the forward link and the reverse link in the TDD mode, and assigns time slots beginning at a time slot in an area close to the guard time in order of each mobile station nearest to the base station.

18. (Previously Presented) The call control method of claim 17, further comprising the steps of:

generating information obtained using the duplexing mode determination factor and reporting the generated information to the base station during predetermined periods during communication; and

performing mode switching and performing communication with the new channel if a reverse mode switching request is received from the base station and a new channel is assigned by the base station.

19. (Original) The call control method of claim 18, wherein the information obtained using the duplexing mode determination factor, transmitted to the base station during the predetermined periods, is transmitted over a dedicated control channel for the reverse mode.

20. (Previously Presented) The call control method of claim 17, wherein the information obtained using the duplexing mode determination factor comprises at least one of power of a pilot signal received from the base station and geographical position information of the mobile station.

21. (Cancelled)

22. (Cancelled)

23. (Original) The call control method of claim 18, wherein the information obtained using the duplexing mode determination factor comprises power of a pilot signal received from the base station and geographical position information of the mobile station.

24. (Currently Amended) A base station apparatus for separately providing a service in a time division duplexing (TDD) mode and a frequency division duplexing (FDD) mode according to a distance between the base station and a mobile station, comprising:

a coding processor for performing TDD encoding and TDD decoding, and performing FDD decoding;

a diplexer for separating a reception signal at a frequency band assigned to the FDD mode from a signal at a frequency band assigned to the TDD mode;

a radio processor for down-converting a signal at a frequency band assigned to the FDD mode, and up- or down-converting a signal at a frequency band assigned to the TDD mode;

a TDD transmission/reception separator for separating transmission and reception of a TDD duplexing signal between the coding processor and the radio processor; and

a controller for controlling the TDD transmission/reception separator, the coding processor and the radio processor, and during call assignment to the mobile station, determining a reverse transmission mode according to a duplexing mode determination factor received from the mobile station and setting up a channel for the determined reverse mode and a forward channel;

wherein the base station assigns to the mobile station a channel of a forward link and a reverse link in the TDD mode if the mobile station is located in a close area, and a channel of the forward link in the TDD mode and a channel of the reverse link in the FDD mode if the mobile station is located in a remote area;

wherein the controller assigns a frequency resource in a predetermined area among frequency resources available in the base station as reverse link resource in the FDD mode for reverse transmission, and assigns the remaining available frequency resources to ~~a~~ the forward link and ~~a~~ the reverse link in the TDD mode

wherein the controller sets up a guard time of a predetermined time between switching times of ~~a~~ the forward link and ~~a~~ the reverse link in the TDD mode, and assigns time slots beginning at a time slot in an area close to the guard time in order of each mobile station nearest to the base station.

25. (Currently Amended) A mobile station apparatus for a mobile communication system separately providing a service in a time division duplexing (TDD) mode and a frequency division duplexing (FDD) mode according to a distance between a base station and the mobile station, comprising:

a coding processor for performing TDD encoding and TDD decoding, and performing FDD encoding;

a diplexer for separating a reception signal at a frequency band assigned to the FDD mode from a signal at a frequency band assigned to the TDD mode;

a radio processor for up-converting a signal at a frequency band assigned to the FDD mode, and up- or down-converting a signal at a frequency band assigned to the TDD mode;

a TDD transmission/reception separator for separating transmission and reception of a TDD signal between the coding processor and the radio processor; and

a controller for controlling the TDD transmission/reception separator, the coding processor and the radio processor, and during call assignment, generating information obtained using a duplexing mode determination factor, delivering the generated information to the base station, and controlling communication using a channel assigned for a mode set by the base station;

wherein the base station assigns to the mobile station a channel of a forward link and a reverse link in the TDD mode if the mobile station is located in a close area, and a channel of the forward link in the TDD mode and a channel of the reverse link in the FDD mode if the mobile station is located in a remote area;

wherein a frequency resource in a predetermined area among frequency resources available in the base station is assigned as a resource for ~~a~~ the reverse link in the FDD mode for reverse transmission, and the remaining available frequency resources are assigned to ~~a~~ the forward link and ~~a~~ the reverse link in the TDD mode; and

wherein the base station sets up a guard time of a predetermined time between switching times of ~~a~~ the forward link and ~~a~~ the reverse link in the TDD mode, and assigns time slots beginning at a time slot in an area close to the guard time in order of each mobile station nearest to the base station.

26. (Currently Amended) A method for allocating resources in a wireless communication system, the wireless communication system including a plurality of mobile stations, and a base station for allocating and communicating with the mobile stations, the method comprising the steps of:

dividing, by the base station, a system bandwidth into a different time division duplexing (TDD) bandwidth and a different frequency division duplexing (FDD) bandwidth;  
receiving a mode determination factor from the mobile station; and  
allocating at least one of TDD bandwidth and FDD bandwidth according to the mode determination factor;

wherein the base station assigns to the mobile station a channel of a forward link and a reverse link in the TDD mode if the mobile station is located in a close area, and a channel of the forward link in the TDD mode and a channel of the reverse link in the FDD mode if the mobile station is located in a remote area;

wherein the base station assigns a frequency resource in a predetermined area among frequency resources available in the base station as reverse link resource in the FDD mode for reverse transmission, and assigns the remaining available frequency resources to-a the forward link and-a the reverse link in a TDD mode; and

wherein the base station sets up a guard time of a predetermined time between switching times of-a the forward link and-a the reverse link in the TDD mode, and assigns TDD bandwidth resource beginning at a time slot in an area close to the guard time in order of each mobile station nearest to the base station.

27. (Previously Presented) The method of claim 26, wherein the TDD bandwidth is greater than the FDD bandwidth.

28. (Previously Presented) The method of claim 26, wherein the TDD bandwidth includes at least one of downlink resources and uplink resources.

29. (Previously Presented) The method of claim 28, wherein the FDD bandwidth includes uplink resources.

30. (Previously Presented) The method of claim 29, wherein the allocating step comprises:

comparing the mode determination factor with a predetermined threshold;  
allocating uplink and downlink resources of the TDD bandwidth if the mode determination factor is less than the predetermined threshold; and  
allocating uplink resources of FDD bandwidth if the mode determination factor is greater than or equal to the predetermined threshold.

31. (Previously Presented) The method of claim 30, wherein the mode determination factor is a pilot signal strength, which at least one mobile station (MS) receives from the base station.

32. (Previously Presented) The method of claim 30, wherein the mode determination factor is geographical position information of the mobile station.

33. (Previously Presented) The method of claim 30, wherein the mode determination factor is a moving velocity of a mobile station.

34. (Previously Presented) The method of claim 30, wherein the mode determination factor is determined at least to be one of a pilot signal strength, which at least one MS receives from the base station, and the moving velocity of the mobile station.

35. (Currently Amended) A transmitting and receiving apparatus in a wireless communication system, the wireless communication system including a plurality of mobile stations, and a base station for allocating and communicating with the mobile stations, the apparatus comprising:

an encoding processor for processing a signal of a TDD bandwidth and a signal of a FDD bandwidth and operating in a TDD and/or an FDD mode;

a diplexer for dividing the TDD bandwidth signal and the FDD signal;

a transmission/reception separator for dividing, transmitting and receiving the signal, sending the transmitting signal to the diplexer, and sending the receiving signal to the encoding processor; and

a controller for controlling the encoding processor, the transmission/reception separator and diplexer, and allocating TDD and FDD bandwidth resources using a mode determination factor of the mobile station;

wherein the base station assigns to the mobile station a channel of a forward link and a reverse link in the TDD mode if the mobile station is located in a close area, and a channel of the forward link in the TDD mode and a channel of the reverse link in the FDD mode if the mobile station is located in a remote area;

wherein the controller assigns a frequency resource in a predetermined area among frequency resources available in the base station as the reverse link in the FDD mode resource for reverse transmission, and assigns the remaining available frequency resources to a the forward link and a the reverse link in the TDD mode; and

wherein the controller sets up a guard time of a predetermined time between switching times of a the forward link and a the reverse link in the TDD mode, and assigns the TDD bandwidth resource beginning at a time slot in an area close to the guard time in order of each mobile station nearest to the base station.

36. (Previously Presented) The apparatus of claim 35, wherein the encoding processor comprises:

an FDD decoder for processing the received FDD signal and sending the processed FDD signal to the transmission/reception separator;

a TDD decoder for processing the received TDD signal and sending the processed TDD signal to the transmission/reception separator; and

a TDD encoder for processing the TDD bandwidth signal, and transmitting the processed signal to the transmitting and received separator.

37. (Currently Amended) A method for allocating resource in a base station of wireless communication system for providing a service in both time division duplexing (TDD) mode and frequency division duplexing (FDD) mode using first and second frequency bands, the method comprising:

allocating forward and reverse channels using the first frequency band in a pair in the TDD mode; and

allocating the forward channel using the first frequency band and the reverse channel using the second frequency band in a pair in the FDD mode,

wherein the base station assigns to a mobile station a channel of a forward link and a reverse link in the TDD mode if the mobile station is located in a close area, and a channel of the forward link in the TDD mode and a channel of the reverse link in the FDD mode if the mobile station is located in a remote area;

wherein the first frequency band is used for transmission and reception of both the forward and reverse channels in the TDD mode, and the second frequency band is dedicated to the reverse channel in the FDD mode; and

wherein the base station sets up a guard time of a predetermined time between switching times of ~~a~~ the forward link and ~~a~~ the reverse link in the TDD mode, and assigns time slots beginning at a time slot in an area close to the guard time in order of each mobile station nearest to the base station.

38. (Cancelled)